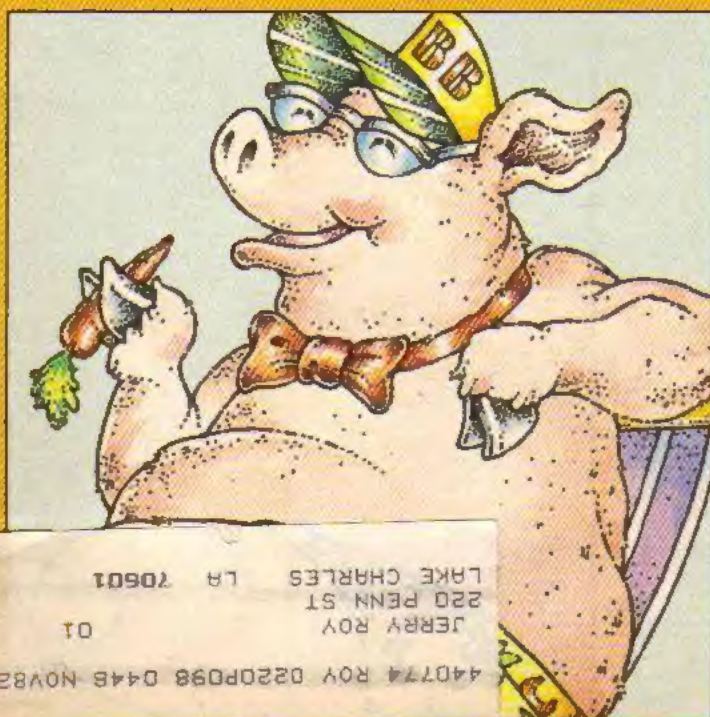
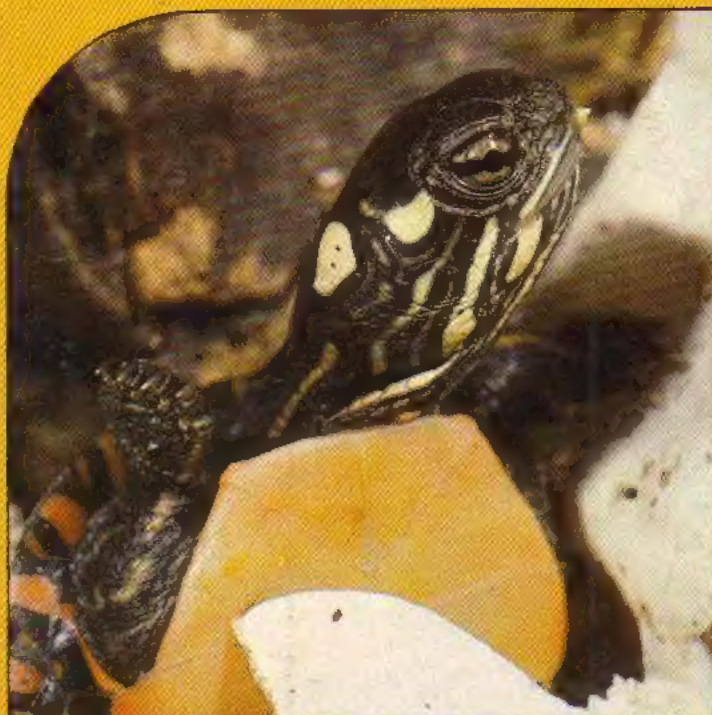
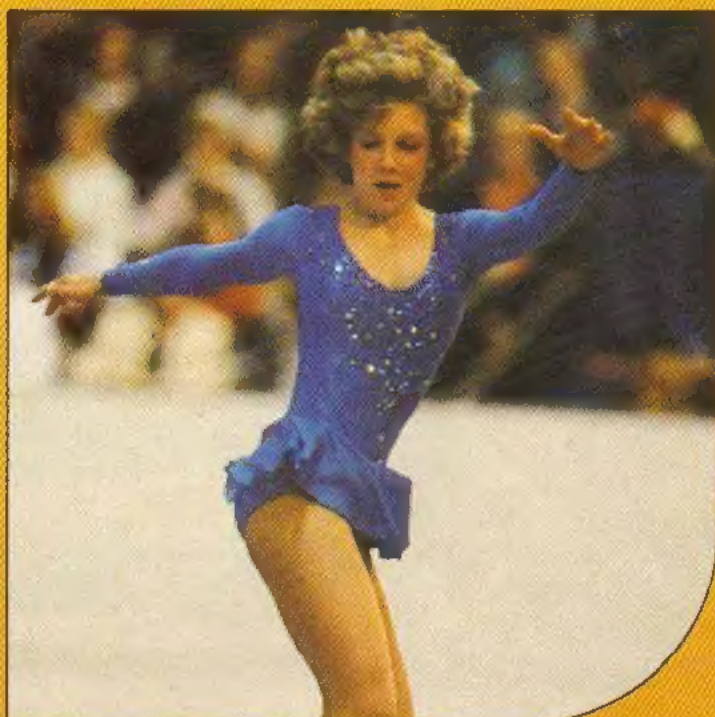


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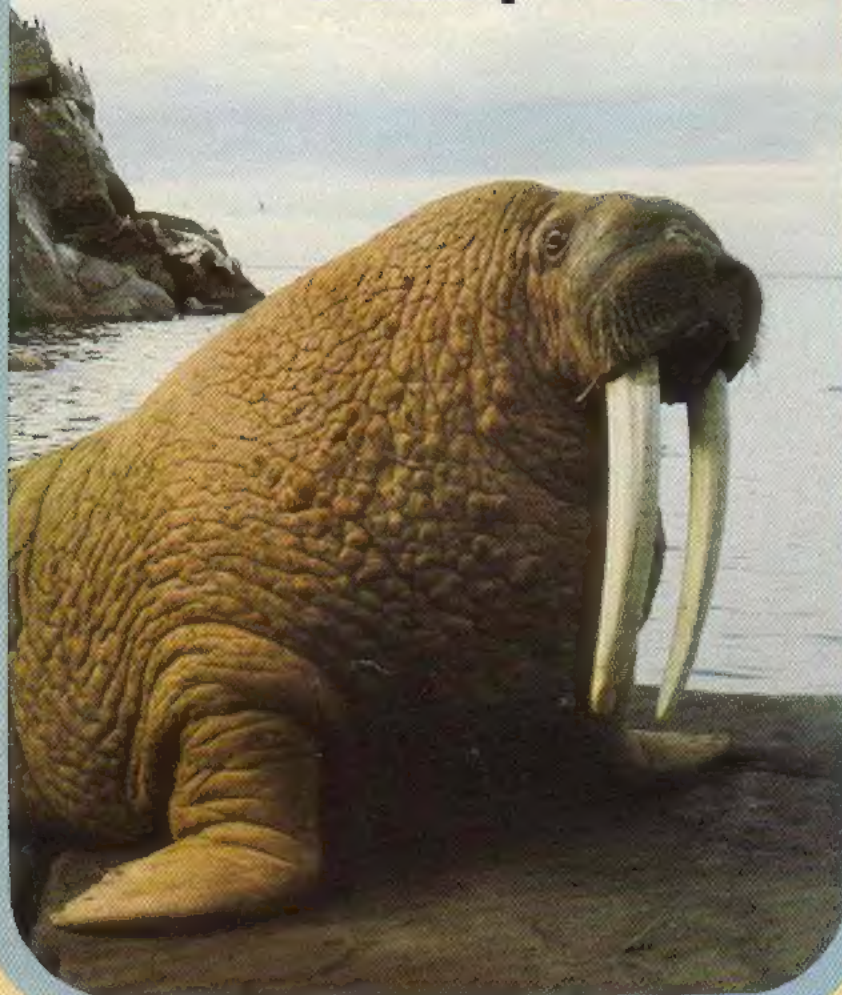
Inside: A New Bloodhound Gang Mystery!



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Tusk, Tusk!



Small teeth work well enough for you, but not for an animal like the walrus. To help it survive, a walrus has two special teeth. These tusks can grow three feet long and weigh as much as 10 pounds.

A walrus's giant teeth come in very handy. It uses them to dig up tasty shellfish that are buried in the ocean floor. It can also use them to slide across a piece of ice. All it has to do is dig in its tusks and pull!

Want to find out about some other unusual animal teeth? Just turn to page 4.

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THE BETTER TO BITE YOU WITH!

**A LOOK
AT ANIMAL
TEETH** by Gary Turbak

Piranhas (pir-AHN-uz) are little fish that live in the Amazon river of South America. They are famous for their needle-sharp teeth. Whenever these little fish get hungry, their teeth can slice right through the leathery hides of crocodiles or other large animals. After a few minutes of nibbling by piranhas, all that's left of a big animal is its skeleton.

Piranha teeth are just one of many interesting kinds of animal teeth. Some animal teeth are big as bricks. Others are tiny but sharp as razors. All are important. Whether an animal has 6,000 teeth, like the whale shark, or only 16, like the mouse, it depends on its choppers for survival.

Surprising as it seems, some animals which have lots of teeth never chew their food at all. But their teeth do help them to capture their dinner. One example is the very toothy alligator. In swamps, it lies in wait for other animals. Chomp! Its powerful jaws and teeth snap shut, and the alligator's prey doesn't have a chance. But the alligator doesn't chew what it captures. It just swallows its food in big chunks.

Most animals do use their teeth for chewing, of

course. In fact, the type of teeth an animal has is related to the kind of food it eats. Lions and tigers, for example, have long, sharp teeth. They do a good job of tearing meat. Other meat eaters, like dogs and cats, also need sharp biting teeth. Deer, on the other hand, eat lots of grass, grains and twigs. So, like most plant eaters, they have wide, flat teeth for grinding their food.

Have you ever been nipped by a dog? Then you know that animal teeth are sometimes used as weapons. To defend themselves, horses and mules bite when they get into a fight. Baboons also bite when they are attacked. In a battle, they can even kill a big animal like a leopard.

As you can see, animal teeth can be pretty terrific—at least when they're not biting you! Here's a closer look at some toothy treasures from the animal kingdom.

Tough Teeth

Some of the world's toughest teeth belong to the beaver. Using its long chisel-like front teeth, this animal can cut through the trunk of a tree. A beaver

Left: Crocodiles use their teeth only for holding and tearing their food.

Right: A beaver's teeth get sharper as it chews on wood. The inside of the teeth wear down, leaving the front edges sharp as chisels.



has about twice the chewing force of a person. It uses tree branches to build dams, while the bark becomes a tasty meal. But these tough teeth do cause one big problem. Since they never stop growing, a beaver must chew on wood every day to keep its teeth from getting too long. Over a year, it will gnaw down hundreds of trees.

Other rodents, such as woodchucks, squirrels and rats, have the same problem. So they have to keep gnawing, too. And you think brushing is a pain in the mouth!

Baby Tooth

Some baby animals grow an important tooth even before they're born. Called an egg tooth, it is used by animals which hatch from eggs. Birds, frogs, lizards and turtles all grow a hard point on the end of their noses. They use this "tooth" to crack their egg shell and peck their way out. But the egg tooth isn't a true tooth. After one of these animals hatches, its egg tooth slowly disappears. And that's the last tooth a bird will ever have. Like turtles and most insects, birds get along fine without any teeth at all. ➤➤

Left: The only tooth a turtle ever has is an egg tooth, which it uses to peck its way out of the shell.

Jaws!

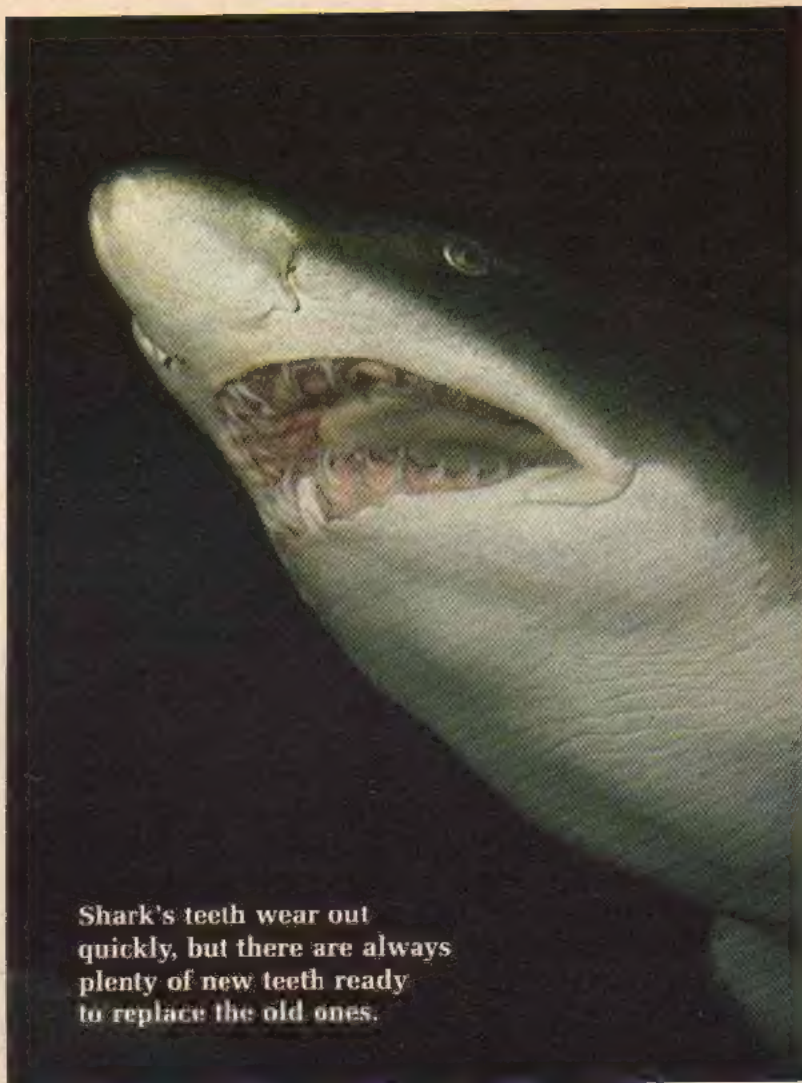
The tiger shark is one animal that never has to worry about the condition of its teeth. Like many other sharks, it has several rows of teeth, one behind the other. They grow out of the skin instead of being anchored to the jawbone. When a tiger shark's front teeth wear down with age, they drop out. From the second row, more teeth move into place. Over a period of ten years, a tiger shark may use up and shed 24,000 teeth!

Remember the great white shark in *Jaws*? This animal has teeth with tiny saw-toothed edges. Its extra teeth lie flat behind the front ones and move up into empty places as needed.

Missing Teeth

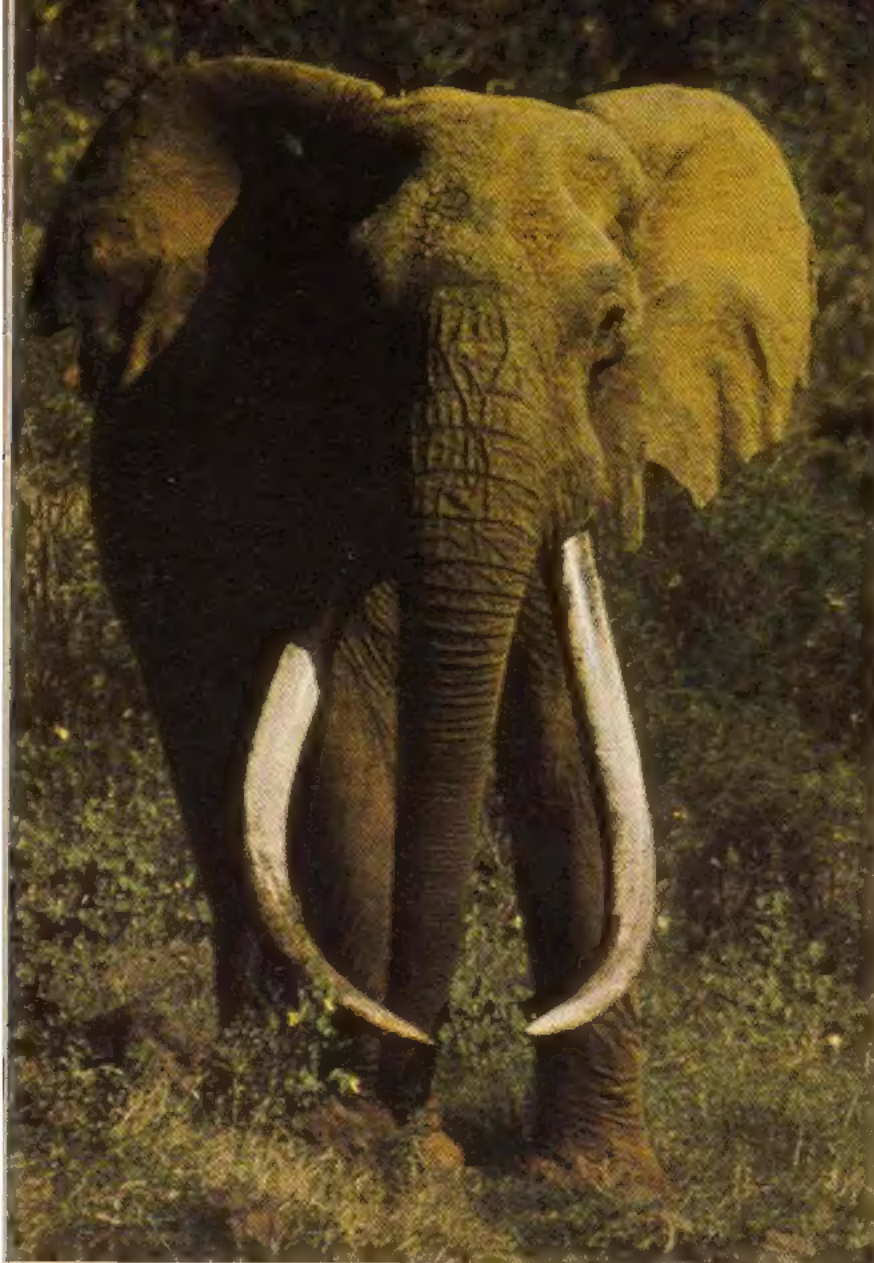
Cattle look like they need to replace some lost teeth. But they really aren't lost. Cattle just don't have any top teeth in front. Next time you see a cow grazing, watch how it grabs a bite. Without top teeth to bite off grass stems, a cow has to jerk its head to get the grass.

Cattle also wear out their teeth faster than many animals because they chew their food twice. First time around, they grind the grass a little and swallow it. Later, lying quietly in a pasture, they bring the food back into their mouth and chew it again. This is called chewing the cud. Yuck!



Shark's teeth wear out quickly, but there are always plenty of new teeth ready to replace the old ones.





Terrific Tusks

The biggest animal teeth belong to the elephant, whose tusks are really teeth. A tusk can grow up to 11 feet long (3.3 m) and weigh more than 200 pounds (91 kg). It helps the elephant dig up roots, bushes and even small trees to eat.

Tusks are also used by a mother elephant to protect her calf. She charges at enemies and tries to stab them with her huge teeth. A charging elephant can poke them right through the side of a car.

In today's world, an elephant is not so lucky to have tusks. These teeth are made of valuable ivory. Illegal hunters, called poachers, kill elephants and steal their tusks. So even though tusks are supposed to help an elephant defend itself, these teeth can cost the elephant its life!

Poison Teeth

Poisonous snakes have a special kind of long, sharp, hollow teeth called fangs. They carry a poison called venom which is made by the snake's body. When the snake bites another animal, the venom squirts from a tiny hole in the tip of each fang. From there, it enters the victim's body. The poison soon makes the animal stop struggling. It also helps the snake to digest its food. Snakes aren't the only animals with fangs, of course. Poisonous spiders have them, too. Fangs work almost like the needle a doctor uses to give shots. Some medicine!

Above: Elephant tusks are the largest teeth in the animal world. You can't see this elephant's inside teeth, but they're pretty impressive, too. The molars or chewing teeth are big as building bricks.

Left: A cow must jerk her head as she grazes. Like all cattle, she doesn't have any upper teeth with which to bite off the stems of grass.

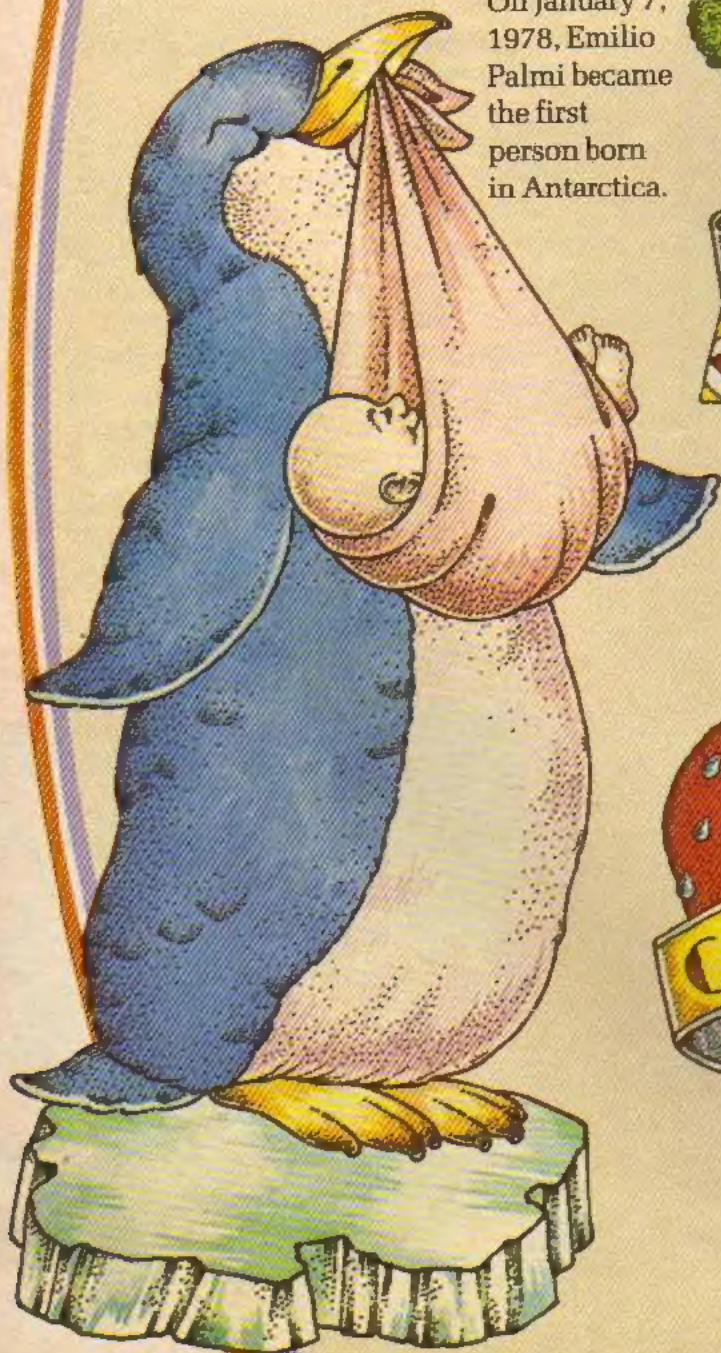
Right: The first thing you notice about this rattle-snake is its fangs. Snakes also have smaller back teeth which curve toward their throat. These little teeth help them swallow their food.



Factoids

What are factoids? They are weird little facts that are stranger than strange, truer than true. Use them to wow your friends, amaze your family and dazzle your teachers.

On January 7, 1978, Emilio Palmi became the first person born in Antarctica.



An average elevator travels about 10,000 miles a year.



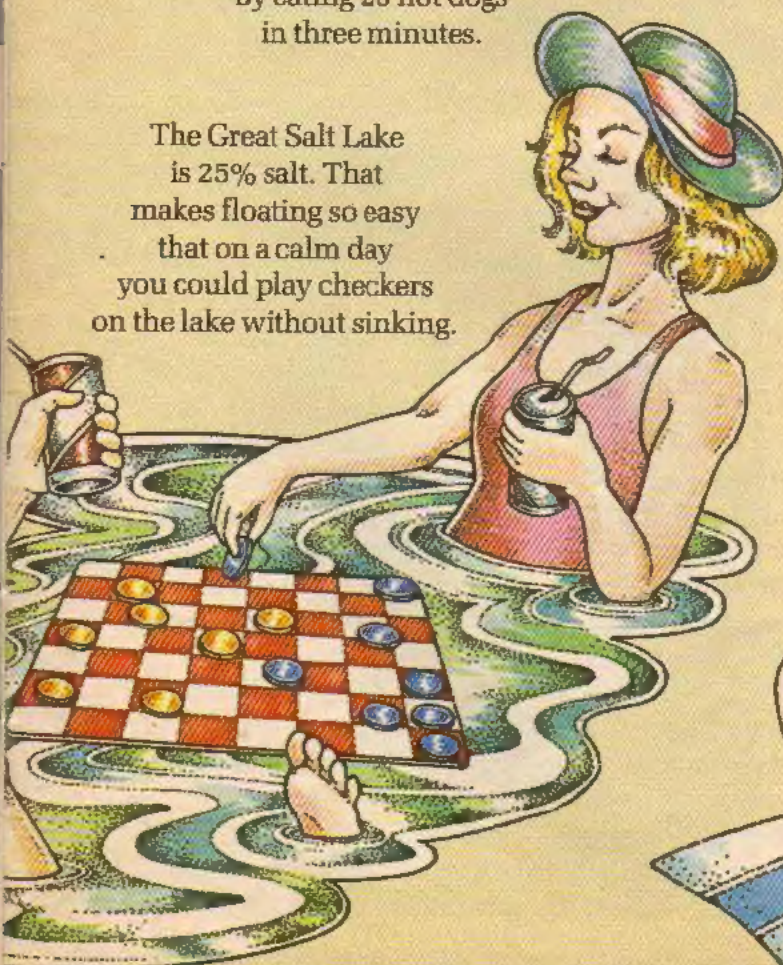
More than half of all the strawberries in the U.S. are grown in California.





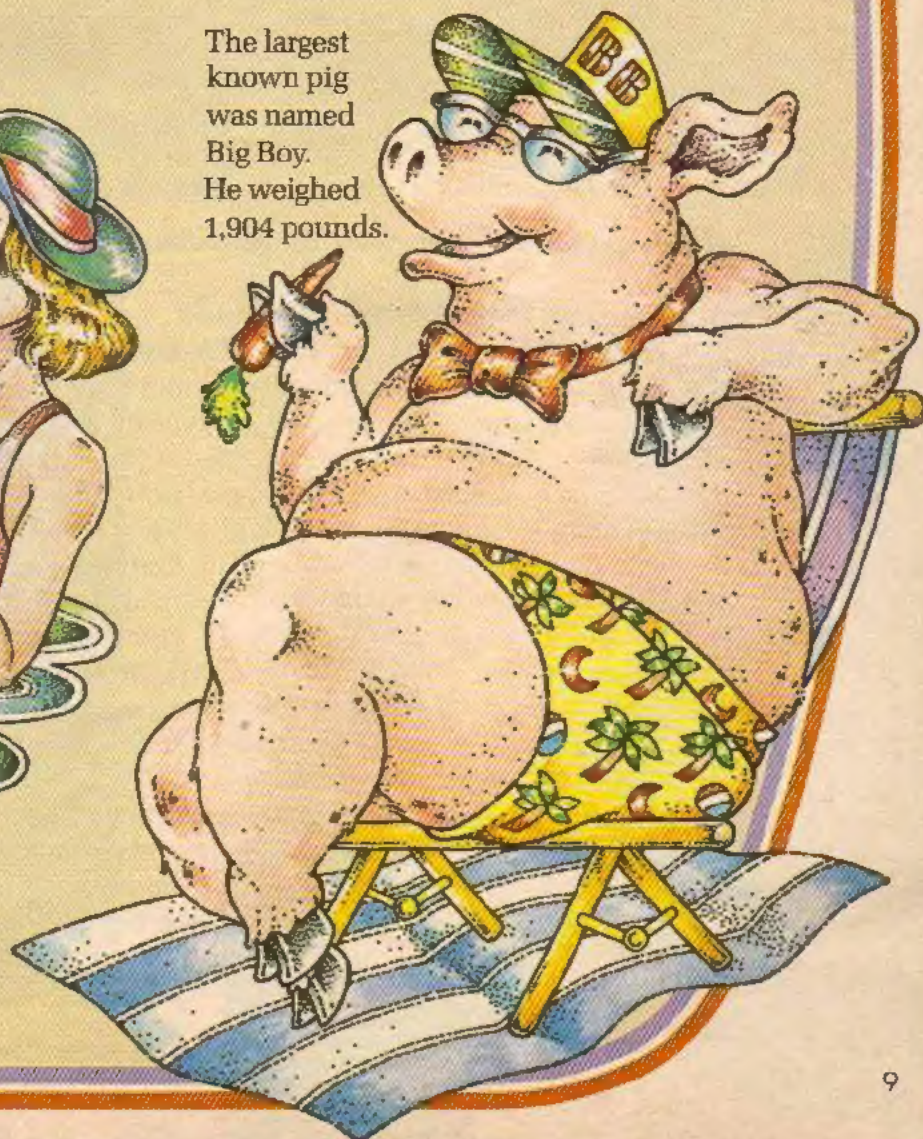
In 1977, Linda Kuerth set a record by eating 23 hot dogs in three minutes.

The Great Salt Lake is 25% salt. That makes floating so easy that on a calm day you could play checkers on the lake without sinking.



One million Americans are bitten by dogs every year.

The largest known pig was named Big Boy. He weighed 1,904 pounds.



Contact Report

by Michele Lyons

Trashy Treasures You wouldn't think that people would throw away anything valuable. But a study of the garbage in a California park turned up 44 cameras, 41 sleeping bags and a bathtub. Of course, all the garbage at Yosemite National Park wasn't so great. Also found were 487 pairs of glasses and 10,000 combs. And there was plenty of everyday junk, such as bottles, paper and cans.

Those tons of trash might make you think that people today are especially messy. But that's not true. They were just as sloppy 13 years ago. In 1969, researchers found as many as 3,000 pieces of litter per mile on some highways. They picked up such items as false teeth, bowling pins, TV sets and baby cribs.

Studies also show that people under 20 are the worst litter bugs. So lend a helping hand in the fight against litter. Don't throw away your bathtub!



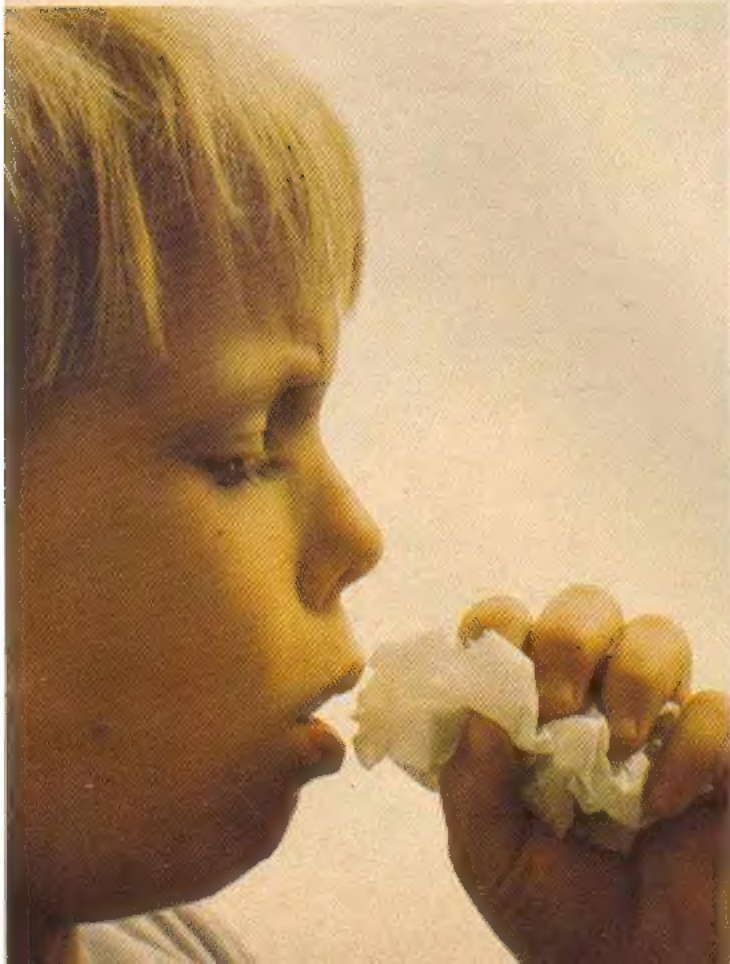
Above: There were a few treasures found in the trash.

Gesundheir! Feel a sneeze coming on? Soon it may be old-fashioned to reach for your handkerchief. It could be healthier to reach for a new super tissue instead!

These new tissues are supposed to stop sick people from coughing or sneezing their germs into the air. They were invented by Eliot Dick, a scientist at the University of Wisconsin. He soaked tissues in iodine, a medicine that kills germs. When the treated tissues come into contact with your sneezes, they wipe out your germs. Of course, the tissues won't cure you when you already have a cold. But they will keep you from spreading the germs to others.

The super tissues may take some time to become popular, though. They're brownish-green, slightly damp and perfumed to hide the smell of iodine. Soon Dick hopes to produce improved tissues which won't smell so bad or look so weird. But until he does, you had better hang on to your hankies!

Left: A new kind of tissue kills germs on contact.



Contact Report

Please, Pass the Pickaloupes Pickles are made from cucumbers. Or at least they were up until now. But today there's a new kind of pickle that comes from a cantaloupe. Created by a plant expert, it's called the pickaloupe (PICK-uh-lope).

Dr. Robert Foster wanted to solve Arizona's pickle problem. There aren't many pickles in that state because cucumbers don't grow well in the hot weather. But cantaloupes do very well. So Dr. Foster began trying to grow a cantaloupe that would make good pickles.

He began working with pollen, the yellowish powder inside most flowers. Taking pollen from several different wild cantaloupes, he mixed them all together. This is how plant breeders create new kinds of fruits and vegetables.

Now Dr. Foster's work has produced the pickaloupe—a regular cantaloupe's close cousin. But it is pickle-shaped and green inside. And after it's soaked in vinegar and spices—well, just pass the hamburgers!



Above: Not only cucumbers can be pickled.

Chocolate Toothpaste? An apple a day is said to keep the doctor away. But can a chocolate a day keep the dentist away? Crazy as it sounds, cocoa—the main substance in chocolate—seems to prevent cavities.

No one knows exactly why it works. But according to Dr. Paul DePaola, something in cocoa seems to keep bacteria from growing on your teeth. Fewer bacteria in your mouth mean fewer cavities.

This news isn't as good as it sounds. The problem is that the helpful substance in cocoa doesn't work unless sugar is also present. But sugar helps to cause tooth decay. So for now, chocolate toothpaste is just a sweet dream.

What's That? Have you seen a story in a newspaper or magazine that belongs in the *Contact Report*? Why not cut it out and send it to us? Be sure to include your name, age, address and the place you found the story. Send it to:

The Contact Report
P.O. Box 599
Ridgefield, NJ 07657



Above: This is not the way to make toothpaste—yet.

The Bloodhound Gang



The Case of the Invisible Knife

Part One

by Judy Rosenbaum

Vikki, Ricardo and Zack, otherwise known as the Bloodhound Gang, stood in front of a rambling old house surrounded by porches. Bordering the house was a large lawn.

"This is a museum?" said Zack in disbelief.

Vikki laughed. "Lots of old houses are made into museums. This is a museum, all right. Look at the sign." She pointed to the signboard reading "Rigby Historical Museum." Below the board, a poster said "Sherlock Holmes Exhibit."

That was all Zack needed. "I've never seen a museum like this," he said. "But if it has the Sherlock Holmes exhibit inside, that's all I care about."

It was really for Zack's sake that the Gang had taken the hour-long bus trip to the Rigby Museum. Vikki and Ricardo had always loved the Sherlock Holmes mysteries. But Zack had just started reading about the great storybook detective. And from the first word on, Zack had admired every story.

Then Vikki's friend, Mr. Chan, a Holmes fan and the security guard at the Rigby Museum, had written her that the Holmes exhibit was coming. The min-

ute Vikki mentioned it, Zack had dragged her to the bus station to get tickets. Oh yes, Zack was excited about this exhibit.

The three young detectives went to the entrance. As they walked through the door, a uniformed man stepped forward. "I'm afraid you can't go in," he said. He looked like a law enforcement officer. "There's been a robbery," he added.

"A robbery!" cried Zack. "You mean something's been stolen from the Sherlock Holmes exhibit?"

"Not from the Holmes exhibit, but from the museum's permanent collection," said the man.

"Maybe we can help," said Ricardo. "We're detectives."

"Look, kids, I know you mean well," said the man. "But we're really busy now. Why don't you run along and..."

Zack opened his mouth to protest, but another voice called from inside the building. "What's going on out there?"

"It's all right, Sheriff. They're just some kids." Behind the uniformed man, another person, also in

uniform, peered out. Vikki gave a cry of surprise.

So did the newcomer. "Vikki!" he exclaimed, coming forward with a broad smile.

To the others, Vikki said, "Mr. Bloodhound worked with this man on the Blue Fox case three years ago, before you two joined up." She smiled. "Gang, this is Sheriff Forbes."

The Sheriff shook hands all around. "And this is my deputy, Seth Novak," he said. "I guess you've come for the Holmes exhibit, but how would you like to do some real detective work?" Turning to Seth, he said, "You go on searching the house and grounds. These young folks can stay with me."

Inside the Museum

Sheriff Forbes led the Gang into a small room filled with anxious-looking people. The room itself looked like an ordinary room. But all the furniture was from the old days. The big desk and chairs were dark and heavy. They had fancy curved legs and lots of carving all over them. "It's like stepping back into time," whispered Ricardo.

"That's the point of a historical museum," Vikki whispered back. "An old house full of furniture from long ago helps you see what living in that time was like. This house shows you the way houses looked in 1890."

The people in the room were very modern, however. One of them was Vikki's friend, Mr. Chan. He gave her a nervous smile, but said nothing. He must feel terrible about the robbery, Vikki realized. After all, he was supposed to protect the museum against thieves.

The woman behind the desk must be Mrs. Mears, the granddaughter of the man who had built the house. Mr. Chan had written Vikki about her. Her family owned the museum.

The three other people in the room were museum visitors. There was a thin gray-haired man of about sixty, a young man in jeans and a middle-aged woman in a pantsuit.

"Sheriff, is this going to take much longer?" said the young man. "I have a class later today."

"We'll call your college if we can't let you go in time," said the sheriff. "I'm sure you understand that this is an emergency. Everyone who was here during the time of the robbery has to stay until we've cleared you."

"But you've searched us all," said the older man.

"Several times," said the woman. "And questioned

us." She spoke with a heavy French accent.

"Please try to be patient," said Sheriff Forbes.

"We're working as fast as we can."

The young man shrugged. "No sweat," he said. He leaned back in his chair, as if he had decided not to let the waiting bother him. But the woman sat very straight on the edge of her chair. Was she scared or just angry and impatient? Zack wondered. The older man took out a bottle of pills from his coat pocket, opened it and took one. He didn't look well at all.

An Unusual Entrance

Near the desk, Zack spotted something that looked like a free-standing door frame. "That's a pretty fancy entrance for this little museum," he said.

"It's a metal detector," said the sheriff. "It's like the ones airplane passengers have to pass through at airports to prove they're not carrying weapons."

Zack went over and passed his hand through the entrance. "I don't feel anything."

"You're not supposed to," said Mr. Chan. "The machine gives off radio waves. Any metal that's nearby absorbs some of these waves and reflects them back to the detector. Then a receiver in the machine turns the radio waves into a strong signal that can be heard."

"Oh, I see," said Zack. "Thanks." He liked Mr. Chan. Most strangers would not take the trouble to explain things at a time like this. No wonder Vikki enjoyed writing to him.

Sheriff Forbes said, "Everyone must pass through the detector before going into the exhibit rooms. None of these people tripped the alarm except for Mr. Leiberman, the older man. And he set it off because he's wearing a pacemaker. So the guard searched him. Except for the pacemaker, he was clean."

"Pacemaker?" Zack said.

Ricardo explained, "Lots of people with bad hearts wear them. They're machines that keep heartbeats regular." That accounted for the pills Mr. Leiberman had taken, Ricardo realized. They were probably for a heart condition.

Sheriff Forbes led the Gang into an exhibit room. "Come on, I'll give you all the information I have," he said. "Mr. Bloodhound always speaks highly of you. Maybe you can make something of this puzzle."

"Oh, man," said Zack as they entered the room. In glass display cases were enough Sherlock Holmes

books and pictures to satisfy the most devoted fan. Standing here and there were department store dummies dressed in 1890s clothing. Best of all was a dummy that looked like Holmes himself. Nearby were some letters written by Arthur Conan Doyle, the author who created the Holmes books.

Vikki asked the sheriff, "What was stolen?"

"A two-cent stamp," he answered. "It's known as the Hawaiian missionary stamp."

"Are you kidding?" interrupted Zack. "Why would anyone steal a two-cent stamp?"

"Because this one's worth \$110,000!" said the sheriff. "You see, Jed Rigby, who built this house, collected rare old stamps and coins from around the world. He also collected jewelry and antiques. Now when special exhibits like the Holmes one come to the museum, Mr. Rigby's collections are moved upstairs. But Mr. Chan is the only guard, so he has to keep patrolling through all the rooms. Since the downstairs rooms get more visitors and have the most important objects, he spends more time here."

The Scene of the Crime

"So someone took the stamp from upstairs?" said Zack.

"Yes, come on up and I'll show you." He led the Gang up a flight of stairs. "It was in a glass display case with other, less valuable stamps. Breaking the glass could have made a noise and brought someone to investigate. But the thief was smart. He or she cut a hole in the glass and just lifted the stamp out. The case was fine this morning when Mr. Chan opened up. Later, on his regular patrol, he saw the hole in the glass."

"So this robbery was well planned," said Vikki. "Someone knew enough to bring along a glasscutting tool."

"There's only one problem," said the sheriff.

"The metal detector!" exclaimed Ricardo. "Everyone had to pass through the metal detector."

"And knives and glasscutting tools are made of metal," said Vikki.

"So unless someone got through with an invisible knife," said Zack, "no one could have been carrying the tool the glass was cut with."

Upstairs, Sheriff Forbes showed the Gang several glass display cases. Most of them held stamp albums and strangely shaped old coins. But one case which held stamp albums now had a hole cut out of its glass. And on the page where the stolen stamp

had been, there was an empty space.

"This is weird," said Zack. "How could anyone with a knife even get in here?"

"Could it have been Mr. Chan or the woman behind the desk?" said Ricardo. "They don't have to pass through the metal detector."

"Not Mr. Chan!" Vikki and Zack said together.

"We can't rule him out," said the Sheriff. "But I won't accuse anyone until I'm sure of the facts. Mrs. Mears is an unlikely suspect, since her family owns the stamps already."

Ricardo said, "Anyway, Mr. Chan and Mrs. Mears could have taken the stamp anytime. Why risk stealing it in broad daylight with other people around? No, don't tell me. Because he, or she, or they, wanted it not to look like an inside job."

"Exactly," said Sheriff Forbes.

Suddenly, Zack stiffened. "What's that?" he said. They all listened. The barest hint of footsteps was followed by a squeak of floorboards. Zack's heart began to pound. He hoped that whoever was there was not carrying the invisible knife.

Then came more footsteps, louder ones. Zack heard a shout and sounds of a struggle. Deputy Novak pushed Mr. Chan into the room. "Hey, look what I found him trying to hide," he said. He held up something shiny.

It was a glasscutter.

Is Mr. Chan guilty of stealing the stamp?

To find out, read the conclusion of "The Case of the Invisible Knife," in the next issue of 3-2-1 CONTACT.



John Williams
Jshimman@archive.org



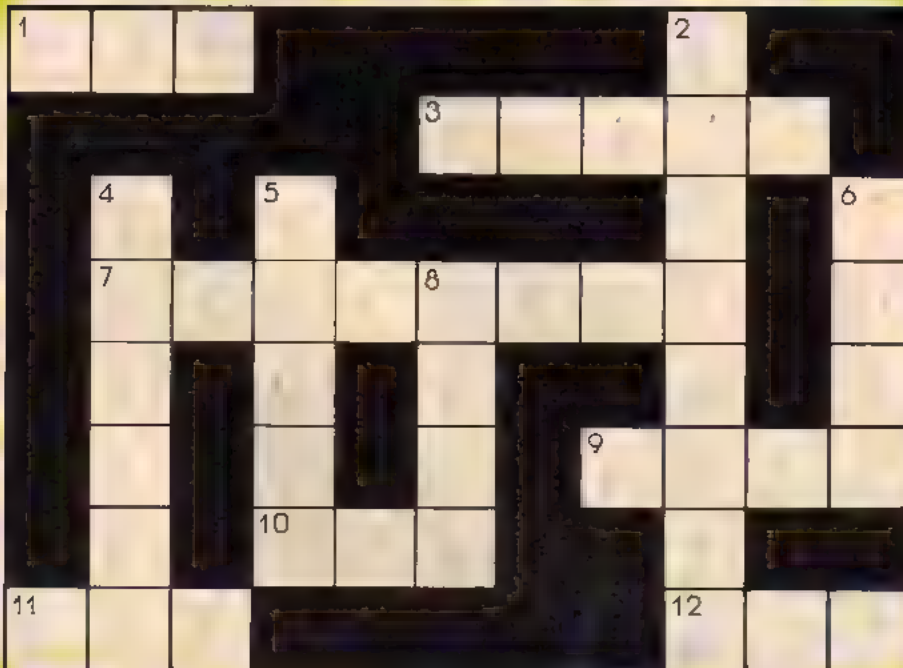
Do It!

Waterfall Hunt

The names of 10 waterfalls from around the world are hidden here. They run across and diagonally. They are NOT up and down. Some of them are backward.

ANGEL, Venezuela
 COMET, Washington
 FALL CREEK, Tennessee
 JOG, India
 KRIMML, Austria
 NACHI, Japan
 PALOUSE, Washington
 SEVEN, Colorado
 VERNAL, California
 WOLLOMOMBI, Australia

W F A L L C R E E K L
 O H A P A P Y B R A
 I L R T H N D A I N Y
 T L G O T G Y M R O
 U R O E E N E M E E E
 F J M M R O L V M T
 H E G O P A L O U S E
 A N C M G A N D G R
 A I G A B N D R O N X
 N A C H I N E V E S



Toothy Crossword

Across

1. A cow chews her _____
3. A snake has these long teeth
7. It has the largest teeth in the world
9. A clock goes tick _____

10. Dirt and water
11. Weep
12. Very warm

Down

2. To get out of a shell, some baby animals have an _____
4. It builds dams
5. Snake poison
6. An elephant's or walrus's tooth
8. It holds your fingers

Answers on Page 37.

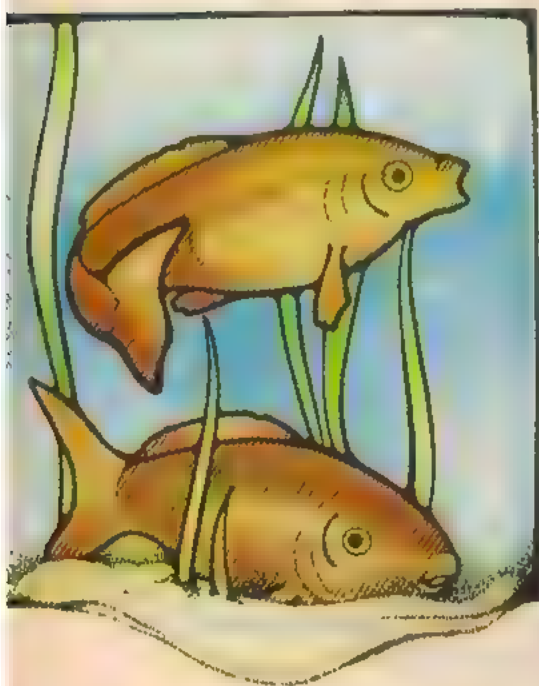
List of the Month

Cold Critters

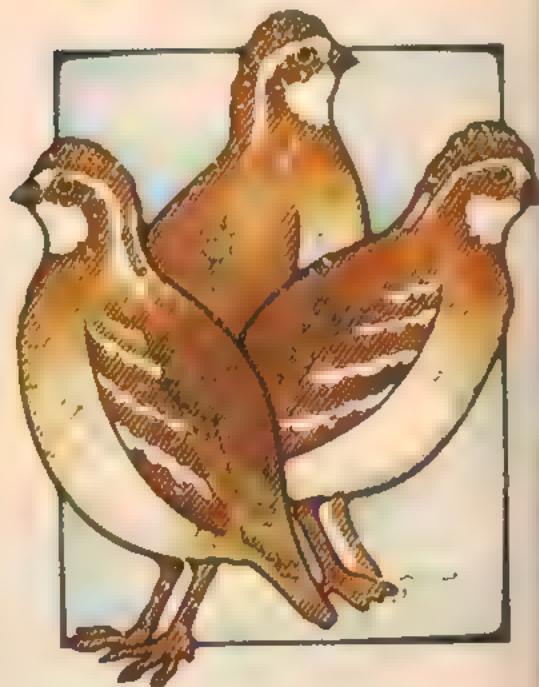
by Joanna Foley

Winter is a rough time for animals. Here are a few tricks that animals use to cope with the cold.

Can You Dig It? A chipmunk digs a tunnel for a winter home. Then it stores a supply of seeds and nuts in one "room" of the tunnel. On top of the food, it makes a bed of leaves and grass. Soon as the first frost falls, the chipmunk settles into its underground home. Once in a while, it wakes up for a fast bite to eat. But mostly, the chipmunk snoozes on its leafy bed and waits for spring.



Frozen Fish Can you picture a live fish inside a block of ice? Sometimes that happens to a fresh water fish called the carp. In the fall, this fish eats a lot and puts on a layer of body fat. Then it settles down into a stream and goes into a deep sleep. Sometimes ice forms on the water. For a short time, the fish can live under ice. But soon it uses up the air in the water. If the ice doesn't melt, the fish will die.



Monkey Baths In Japan, a troop of snow monkeys lives farther north than any other monkeys in the world. They could hardly keep warm in the mountains if the nearby hot springs didn't exist. These springs are natural pools of warm water. They bubble up from within the earth. Whenever the monkeys get cold, they just go for a dip in the heated water. They're the cleanest monkeys in the world!

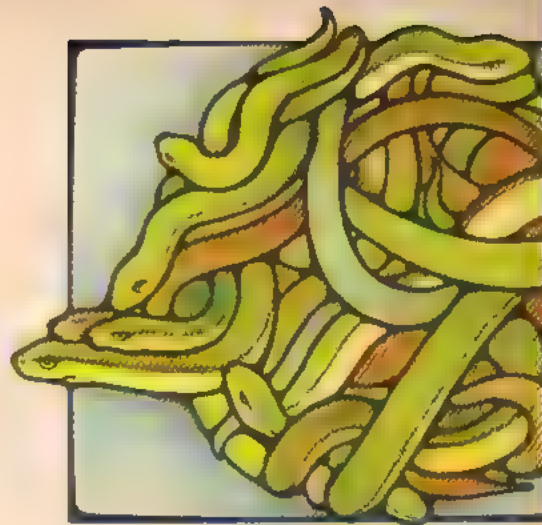


Dunny Suits Just as you do, the snowshoe rabbit puts on a different coat in winter. It sheds its brown hair and replaces it with a coat of thick, white fur. In the snow, the rabbit is nearly invisible to its enemies.

The snowshoe rabbit also has another winter trick. It grows long hairs between its big spread-out toes. Presto! Instant snowshoes! They help the rabbit run on snow without sinking into it.



Ball of Snakes Snakes sleep through the winter in an odd way. Groups of them often curl up in a big ball. As many as 100 different snakes may get twisted together in holes under the ground. No one knows for sure why snakes do this. Since they are cold blooded, it can't be to keep warm. They may get together just to share the few suitable places there are for a snake to spend the winter.



Birdie Buddies The bob-white doesn't fly south in winter. Instead, these little birds live in a small flock called a covey. Each night, they form a circle on the ground, facing outward. Pressing close together helps them keep warm. But their sleeping circle can be risky. If a snow falls at night and an icy crust forms, it's 'bye, 'bye, birdies. They may freeze together and die.



Ox Socks Dressing in layers isn't just for people. The Arctic musk ox does it, too! This big animal has to be well covered to spend the winter out in the open. On its back, a musk ox has a thick coat of hair. It forms a long skirt which hangs down to its ankles. Underneath that is a second coat of warm fur. In spring, the musk ox sheds its wool. People gather it up and spin it into lovely socks and sweaters.



Foxy Ways The arctic fox doesn't look as, er, foxy as its southern cousin. It has a smaller tail. Its nose and ears are shorter, too. Even its legs are short. But nature didn't shortchange this animal. The fox is built to survive in the arctic. The stubby ears, nose and tail do not get frostbite as easily. And with less skin exposed to the cold, the fox holds in more of its body heat. Now that's foxy!



Any Questions?

Why do people stop growing at a certain age?

If you didn't stop growing, you would have a giant-sized problem. Once you were as tall as a house, your bones would barely be able to hold you up!

After you were born, you grew rapidly for two years. Then your growth slowed down. As you reach your teens, growth speeds up again. This usually starts first with girls. But boys catch up soon after.

Chemicals in your body called *hormones* control your growth. These substances are made in your glands. Right now, hormones are sending messages to the cells and organs inside you to keep you growing all the time.

One special hormone, called the *growth hormone*, takes care of growing until you are 11 or 12 years old. Then new kinds of hormones are produced. You spurt up and your body develops even more. By the time you are about 20, your body stops producing these hormones. So you stop growing.

Question sent in by Christa Storey, New York, NY.



Why do cows give milk?

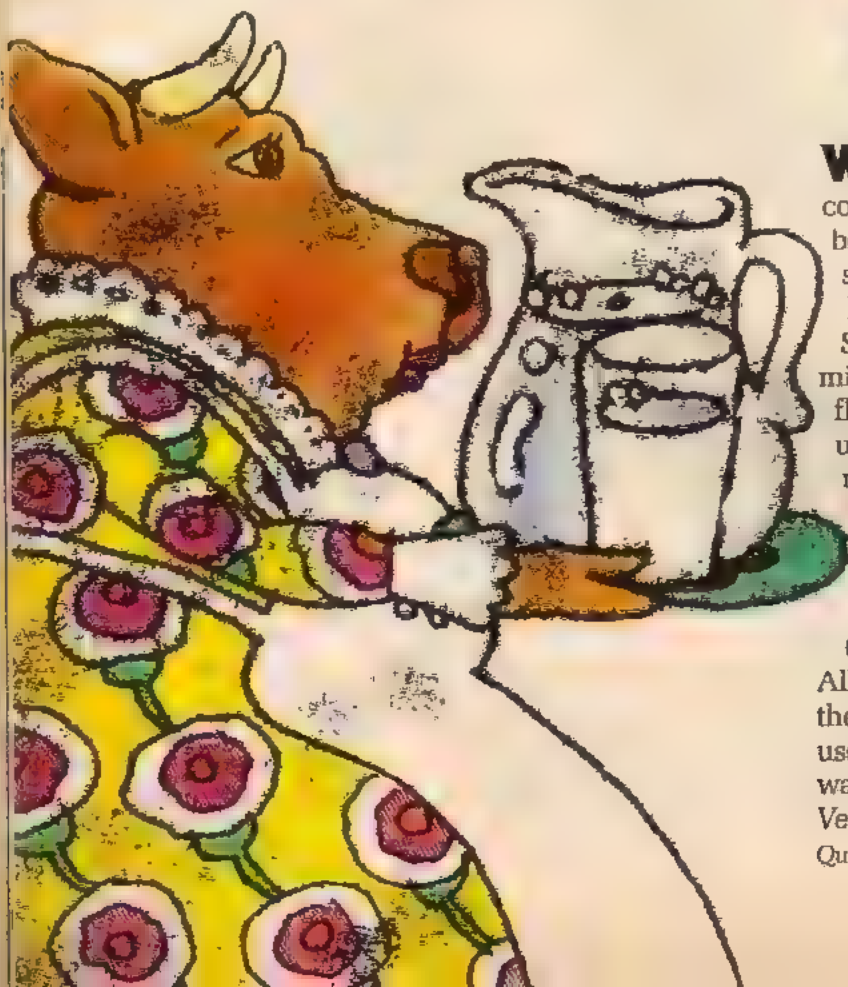
When a cow makes milk she has no idea that it might end up being poured over your breakfast cereal. As far as she knows, her milk is made to feed a different kid — her own!

Soon after she gives birth, a cow starts making milk. It is produced in her udder. This large bag of flesh hangs from her tummy. Special cells in the udder combine with chemicals in the cow's blood to make milk.

A cow is milked twice a day for up to nine months. Some of this milk is fed to her calf. But most of it is drunk by people, or used to make cheese, butter and cream.

Cows aren't the only animals that produce milk. All mammals, from mice to people, make milk for their babies. In different parts of the world, people use milk from goats, camels, llamas, reindeer and water buffalo. And how do you milk a water buffalo? Very carefully!

Question sent in by Brian Dalpez, Waukesha, WI.



Do you have a question that no one seems able to answer? Why not ask us? Send your question, along with your name, address, and age, to:

Any Questions?
3-2-1 CONTACT
P.O. Box 599
Ridgefield, NJ 07657

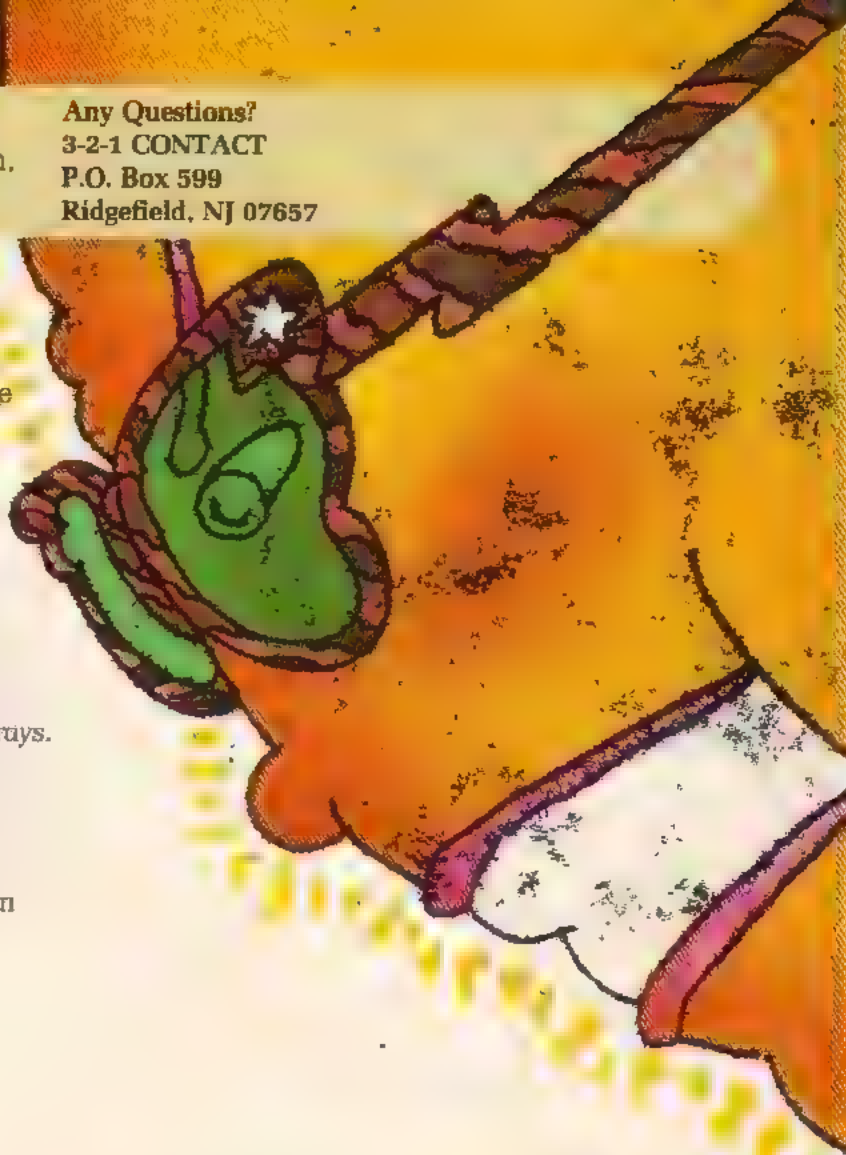
How does the sun make people tan? Some people spend a day in the sun and come home with a healthy-looking tan. Others get a painful, stinging sunburn. Ouch!

The color of a person's skin is caused by the same thing. In your skin is a substance, called *melanin* (MEL-uh-nun). The more melanin you have, the darker your skin is. How much melanin you have depends on your parents. If they have a lot in their skin, chances are you will, too.

There is always some melanin in the top layer of your skin. It is there to protect you from *ultraviolet rays*. These are the harmful rays of the sun that burn you.

When you are in the sun, your body produces extra melanin to protect you from ultraviolet rays. Sometimes melanin is produced in blotches. That's how you get freckles. When your body makes melanin all over, you get a suntan. If your skin doesn't make enough melanin, you get a sunburn.

Question sent in by Joanne Griffith, Madera, CA



Do a ladybug's spots tell how old she is? When a spider crawls on you, chances are you brush it off. Spiders are sort of creepy. But if a ladybug lands on your arm, you just smile.

Different ladybugs have different numbers of spots. Some have none at all. But the number of spots a bug has does not tell you its age. If it did, nearly all ladybugs would have one spot. Few of them live more than a year.

The number of spots a ladybug has depends on how many its parents have. If the mother bug has two and the father bug has two, their baby will probably have two. If the mother has two and the father three, the baby will have two or three. It won't have five.

By the way, not all ladybugs are "ladies." Half of them should really be called "gentleman bugs."

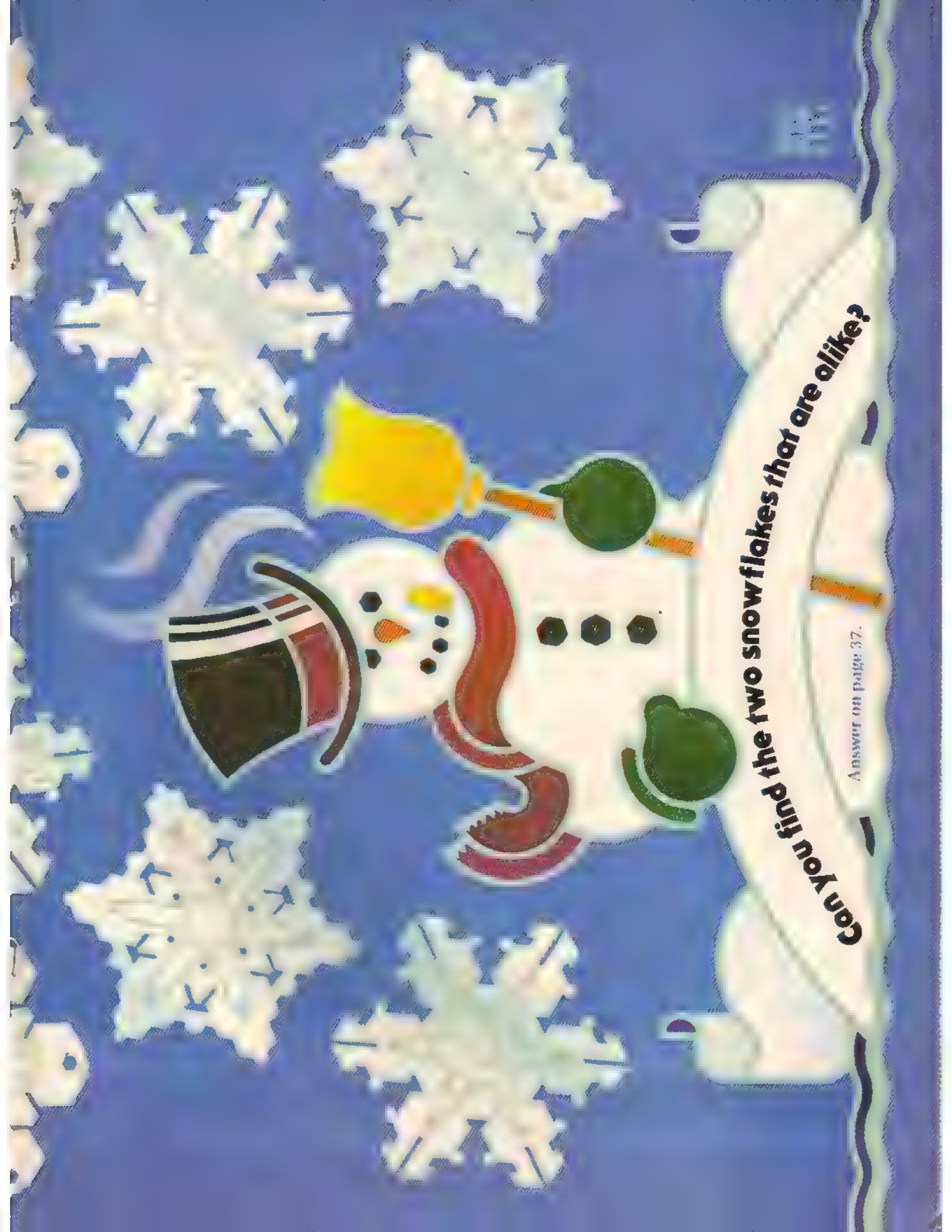
Question sent in by Lauren Clarke, Sea Bright, NJ





Can you find the two snowflakes that are alike?

Answer on page 37.



Chills and Thrills

A Winter Activity Kit!

by Jonathan Schwartz

Winter is the wild and wooly season. It brings howling winds and snowball fights. It also brings chilly days and frosty nights.

Ever wonder why winter comes when it does? It's because the earth doesn't stand straight up and down. Right now, the northern half of the earth is leaning away from the sun. The northern half is where the United States is located. So we're getting less sunlight and warmth in January than we'll get in July.

Meanwhile, the southern half of the earth is leaning toward the sun. So it's summertime for people who live in places like South America and Australia.

To help you get the most out of winter, we have a few cool experiments and some fun things to do. Ready for a few frosty facts about winter? Then keep reading!



July Snowballs

Here is a way to st-r-e-t-ch winter. Ask your parents if they can spare some room in the freezer. Then fill a plastic bag with snow. Tuck it away in the corner of the freezer. Tell your friends to save some snow, too. When summer comes, take it out and have a snowball fight!

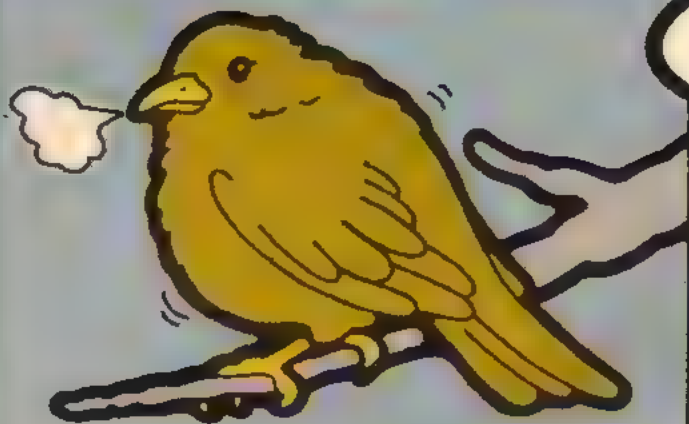
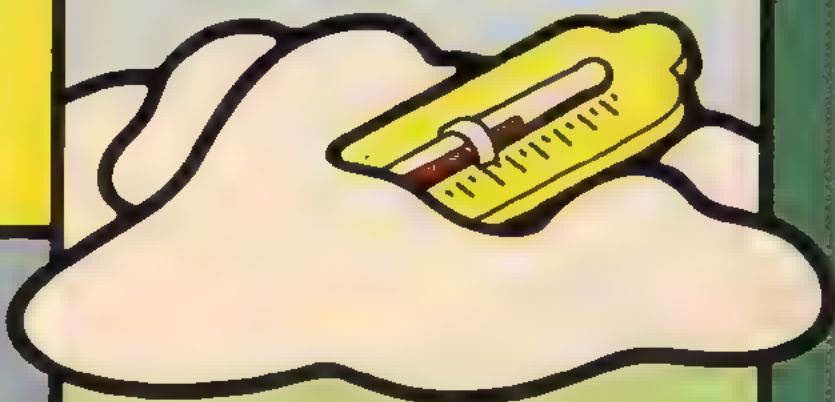


Warm Snow?

Snow can help keep you warm. Sound unbelievable? Then ask anyone who has been inside a snow fort. When snow falls to the ground, a lot of air is trapped between the snowflakes. This air can hold onto heat. It serves as a good insulator.

Snow on the ground insulates the earth from the cold air above. It traps the heat that comes from the warm ground. Like a blanket, the snow protects the roots of trees and keeps them from freezing.

Still can't believe that snow could keep you warm? Try this. Go outside with a thermometer. Check the temperature of the air. Then bury the thermometer in the snow, right next to the ground. After 30 minutes dig it up. Check the temperature. See, we told you so!



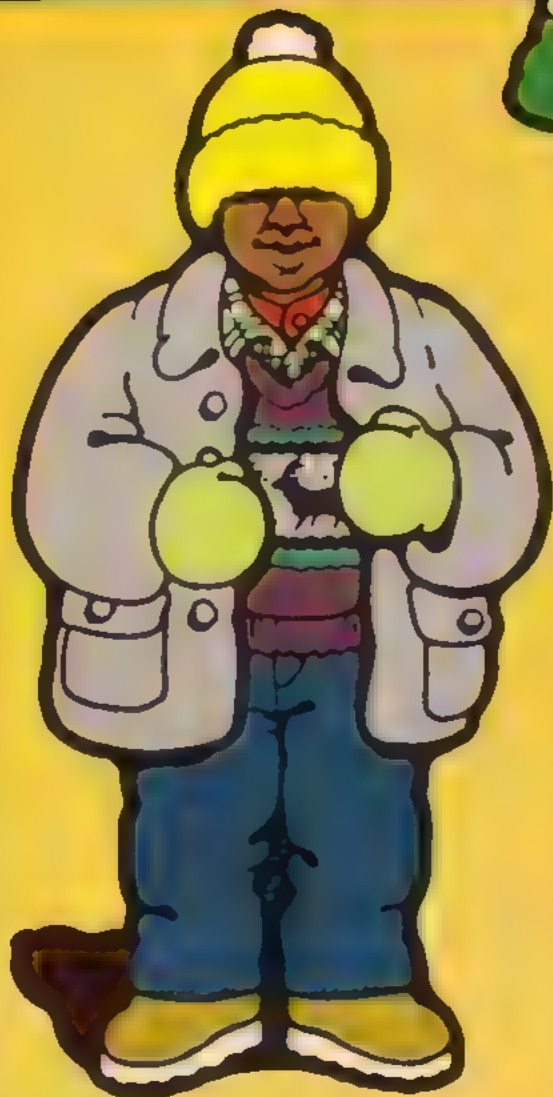
Bird Watching

Many birds fly south in the winter. But many also stick around. Did you ever wonder how they keep warm? Watch a bird on a cold day. You will see it fluffing up its feathers. A bird's body gives off a lot of heat. Feathers trap this heat, creating a layer of warm air. When the feathers get all fluffed up, they can trap more air. That keeps the bird even warmer.

Goose Jackets

You don't use feathers to keep warm... or do you? If you ever wear a nylon ski jacket, you may also be wearing a coat of feathers. Many ski jackets are filled with tiny duck or goose feathers, called down. The feathers trap your body heat and keep you nice and warm. And down coats and jackets are light as—what else?—a feather.





A Hot Idea!

Here's how to keep warm, even if you don't have a down jacket. The trick is to wear layers of clothes. The layers work the same way feathers do. They trap your body heat and keep warm air all around you. Here's what you should wear on a freezing cold winter day:

1. A cotton T-shirt.
2. Long underwear.
3. A flannel shirt.
4. A sweater.
5. A windproof jacket.

Make sure that your jacket fits snugly around your neck and wrists. No chilly air should be able to get in. Here's another tip for those extra-cold, bone-chilling days. Put your sweater under your shirt. That will keep the warm air even closer to your body.

One more thing. Be sure to wear a hat and gloves. The idea is to not give your body heat a way to get out. So keep everything covered!



A Wild and Wooly Experiment

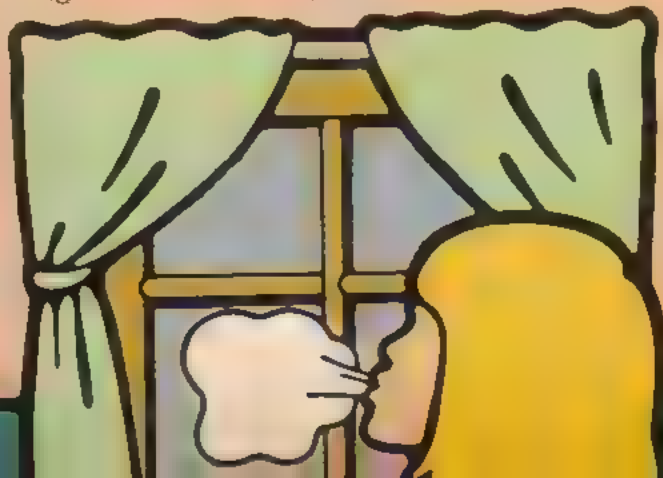
Wool sweaters are good things to wear in the winter. But do you know why? To find out, cut a piece of woolen cloth, about two inches square, from old clothes. Using a pencil, push the wool gently to the bottom of a glass of water. It rises and floats on top. Now push it down again and poke it with the pencil. See the bubbles rising from the wool? That's right. Once again, it is trapped air that makes wool a good insulator.

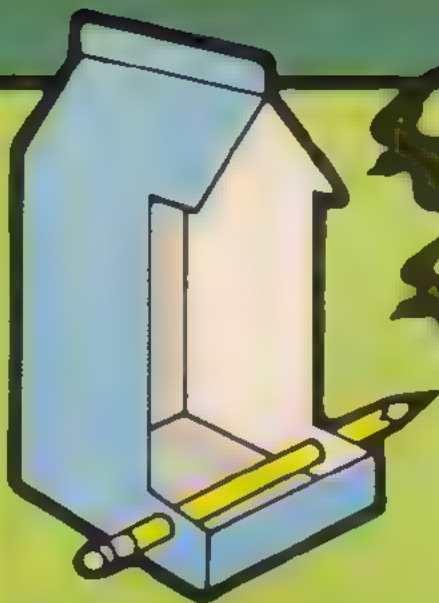
Try the experiment again. But this time use other kinds of cloth. Most won't trap as many air bubbles as wool does.

Frosty Windows

Has frost ever made a pattern on your windows? This usually happens on cold winter nights. Here's why: There is always some water in the air that you can't see. It's called water vapor. Cold air can't hold as much water vapor as warm air. So on cold nights, some of this extra water collects on your windows. There it freezes to form frost.

You can see how frost works by breathing on a window. Your warm breath will melt some of the frost. Then the water will freeze again and make new patterns.





For the Birds

This is a good time of year to learn about birds—at least the ones that stick around for winter. They need a lot of food to survive. If you offer them a free meal, you can get a better look at them.

To make a bird feeder, you need a half-gallon milk carton. Cut out one side, as you see in the picture. Poke a pencil through. This will give the birds a place to perch. Hang the carton from a tree branch or fence. Put it where you can see it easily from your window.

You can also help birds get ready to build their nests. Many will start this work soon. Leave bits of colored yarn near your feeder. Some birds will take the yarn and use it when they build their nests. If you are lucky, you will see the colored yarn in the nests around your neighborhood.



Sky Sight

Winter is a good season for star gazing. In fact, there are some constellations that you can only see this time of year. One of the easiest winter constellations to spot is Orion, the Hunter.

To find Orion, look toward the south on a clear night. See if you can spot three very bright stars in a row. These are the stars that form Orion's belt. Now see if you can spot the rest of the stars in this constellation.



Animal Tracks

Calling all members of the Bloodhound Gang! Winter is a great time to do a little detective work. Go outside with a notebook, pencil and ruler. See if you can find any animal tracks in the mud or snow.

Make a record of the different tracks that

you find. When you spot a print in the snow, draw a picture of it. Measure the print and write down its size. Follow the trail for more clues. Did the animal run up a tree? Did it meet another animal? Did it start to run? If you can't find animal tracks, try making a record of people's footprints that you find.



Elaine Zayak performs one of her famous triple jumps. After leaping into the air, she spins around three times before landing.

CHAMPION

Close your eyes and imagine yourself gliding along the ice. Then, whoosh—you're up in the air, spinning like a top. Around you go, as thousands of people cheer wildly. Feels great, doesn't it? Elaine Zayak thinks so.

At 16, Elaine is a champion figure skater. She has mastered a sport which is one of the hardest to learn of all. She does acrobatic stunts which have never been done by any other female skater in the world. Sports experts think she will win a gold medal at the 1984 Olympics. What does Elaine think about all the fuss? "I really don't think about going into the Olympics," she says. She doesn't want her

family to get excited about it, either, because "then that's kind of pressuring me," she says. "I just want to wait."

Luckily for Elaine, she hasn't had to wait too long to become a skating star. Elaine first put on ice skates when she was three years old. But she didn't begin competing seriously until she was 12. Three years later, she surprised the whole country by coming in first in the National Figure Skating Competition. After that, she came in second in her first World Competition.

"I like competition," says Elaine. "It's a challenge." But she's never counted the awards she's won.



Above: A figure skater must be graceful. Elaine takes jazz dancing lessons to help her move smoothly as she glides and swoops across the ice.

Below: Elaine thinks a skater or any other athlete will perform better when she thinks positive thoughts.

ON ICE

There are too many of them. The walls of her home in Paramus, New Jersey, are covered with medals, ribbons, pins and trophies.

Practice Makes Perfect

To become a top skater takes a lot of practice. Every day Elaine is on the ice for six hours. During the school year, that means she has to get up at 5:30 A.M.

At the rink, Elaine and the skaters with whom she trains start off each morning with some warm-up exercises. Then she skates two patches. These are one-hour sessions during which she cuts perfect loops and circles in the ice. These designs are known as *school figures*. ➤



To make her school figures, Elaine first must use a scribe. This is a metal instrument with two large arms. It looks like a compass that you might use in art class, but is much bigger. With the scribe, Elaine traces an outline on the ice. Then she follows this outline as closely as possible while skating.

Practicing to skate school figures teaches a skater to have balance and control. Being able to do the figures well is also very important in skating competitions. It counts for 30 percent of a skater's score.

After the patches, Elaine practices her free-style skating. That's when she spins, jumps and glides to music. "If you want to be a champion, you have to go, go, go," she says.

Besides practicing at the rink, Elaine takes jazz dance lessons twice a week to keep her graceful. She also works out by lifting weights. Peter Burrows, her coach, makes her train with weights so she will be strong enough to do her jumps properly. Some sports researchers believe that figure skating takes as much exertion as football, basketball or swimming.

But that doesn't mean a kid has to be built like the Incredible Hulk to be able to skate. "If you can walk, you can skate," says Mr. Burrows. "For complete exercise, skating is one of the best things you can do."

In the Spotlight

If you watch Elaine perform, all you see is her beautiful, graceful motion. Like a ballet dancer, she makes her leaps and glides look easy. But what you don't see is all the hard work her body is doing.

A champion skater like Elaine has to be in tip-top shape, according to Dr. Marvin Clein. He's a scientist at the University of Denver who studies the performance of different kinds of athletes. Dr. Clein says that an ice skater must have strong muscles in the back of her legs to skate. When she makes her jumps, these muscles work together with other muscles that extend her knee joint, her trunk and her hip joint and her arm and shoulder muscles.

The stunt Elaine is most noted for is the triple jump. Many skaters can do this difficult jump. But Elaine is the only female skater who includes seven triple jumps in her freestyle performance. For each jump, she leaps off the ice, spins around three times and comes down for a landing. She can do the jump either forward or backward. To do a fancy move like the triple, a skater must add more power to her movements, says Dr. Clein.

Her timing, rhythm, balance and flexibility are also important. A good skater must also know how

to relax. If not, tension builds up in the muscles. A tense skater is more likely to get hurt.

Skaters need more than just strength and good training. The right frame of mind can also help them to succeed. Dr. Clein says that top athletes should picture themselves performing successfully just before each move. If they think about past mistakes, he says, they'll only program their brains to repeat them.

Elaine is careful to take each performance one step at a time. "What most skaters do is think about their hardest jump in the program even before the program starts, and that's bad," she says. "It's also important not to be afraid. You just gotta say to yourself, 'you're gonna do it'," says Elaine. "And if you say that, you'll do it!"

Behind the Scenes

Skaters like Elaine have specially-made skates. The freestyle pair has a very hard boot that's "like a

Below: As judges watch, Elaine performs school figures. They account for 30% of her score in a competition.





Above: Elaine waves to the crowd as she accepts her first prize in the 1981 National Figure Skating Contest.

Left: Elaine makes figure skating look easy. But skating calls for strong muscles and hard work.



cast on your foot," she says. It also has a lot of toe picks for jumps (see *Timeline*, page 30). The pair of skates used for school figures has a softer boot and fewer picks. A pair of skates and blades can cost Elaine up to \$500!

Besides her special skates and pretty costumes, Elaine takes along some good-luck charms when she performs. Dorothy Hamill, the Olympic champion, gave her a heart-shaped pin to wear for luck, and a matching necklace. There's also a toy monkey which Elaine takes to every competition. "I'm very superstitious," she admits.

Before a competition, Elaine listens to rock music to get going. "I have to listen to Led Zeppelin or Bruce Springsteen or the new wave," she says. She also talks to friends on the phone to get her mind off competing.

Does a winner like Elaine ever think of losing? "No, I never really think of it," she says.

"And I don't want to, either."

Timeline



Hundreds of years ago, people's skates had wooden blades.

The History of Ice Skates

by Mary Ann Castronovo

Can you imagine strapping a pair of walrus tusks on your feet and going ice skating? Or sliding around the local rink on a pair of sharpened reindeer bones? Or doing fancy figure eights while wearing cornstalk skates? It's not as weird as it sounds. When people first started making skates 1,000 years ago, they used these different materials to slide across the ice.

All ice skates work the same basic way. As you push the blade into the ice, friction heats the blade. This melts the ice. It's the melting action that makes it possible to slide

across the ice. A pair of bone skates produced very little friction. So ice skating was very hard work. People used sticks to help push themselves across the ice.

By the 1200s, the frozen canals of the Netherlands were dotted with people on wooden skates. Wood gripped the ice better than bone skates. Better grip meant more friction. But sticks were still often used to aid skaters.

The big change in skates came in the 1700s, when people started using iron blades on their skates. At last they could dig into the ice and push, without using a stick. But the leather straps that tied the blade to a skater's shoe often fell off. Finally, in the 1800s, steel blades were screwed to the shoes. Now the skates couldn't fall off. And, with the new blades, skaters could make fancier turns and skate faster than ever.

1997

Lucky you! Today you can ice skate indoors or out. So you never have to worry about the weather. And you have at least three different types of ice skates to choose from.

If you want to jump and spin like Elaine Zayak or Scott Hamilton, you'll need *figure skates*. Cut into the front of their blades are tiny notches. These *toe picks* help you grip the ice better and stop more quickly.

Is ice hockey your game? Then your feet will need the added protection that only *hockey skates* can give them. These skates have tough leather boots with hard box toes. They support your feet and protect them, in case you go

crashing into another player. Their steel blades curve at the front and back. That makes it easier to quickly change directions. So you can fake out your opponent and score the winning goal!

Skaters like Beth and Eric Heiden use *speed skates*. These feature low, lightweight boots. The most important part of these skates is their long, thin blades. They help you move faster and faster, as you zoom toward the finish line.

Choosing a pair of skates today can be more complicated. But whatever kind you pick, they sure beat skating around on a pair of animal bones!

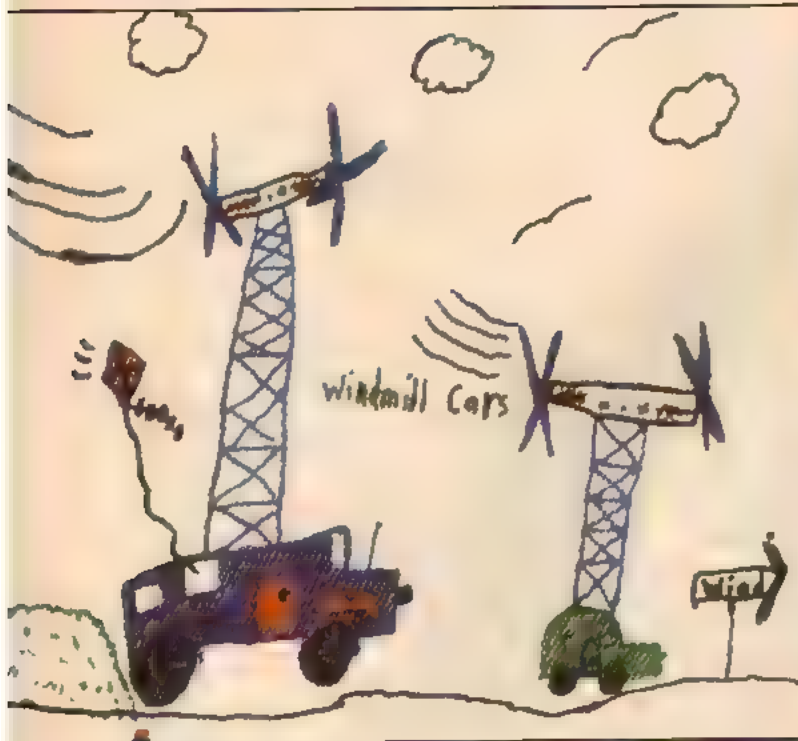
Timeline



Today, speed skaters zoom along on thin, metal blades.

MAIL

Future Windmills Thanks for sending us all those great windmills. Here are some of our favorites:



Eric Carr, San Mateo, CA.
These windmill cars run on air instead of gas.



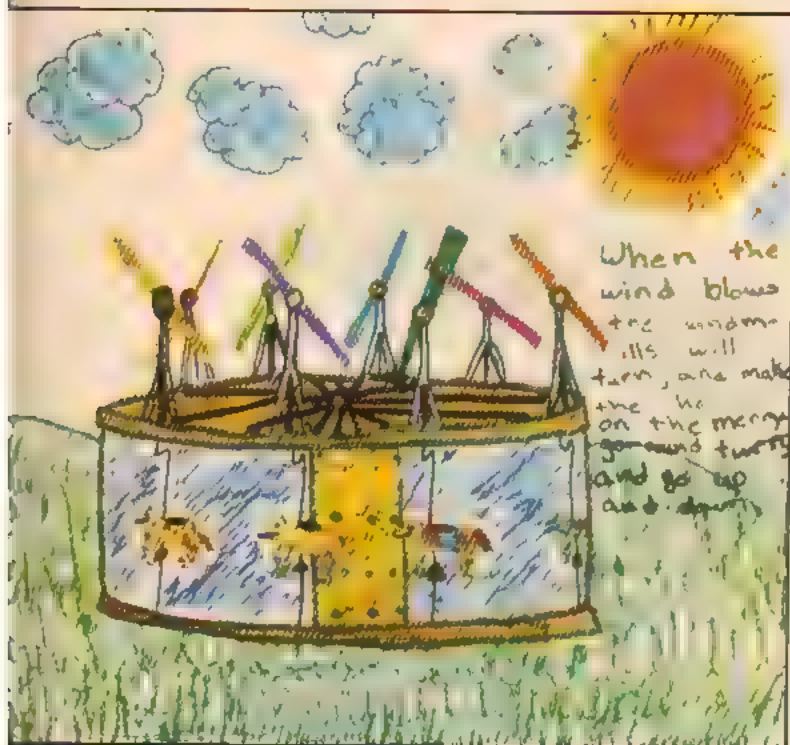
Cindy Nelson, Calgary, Alberta, Canada.
Cindy says her windmill is just for mice—'cause mice like windmills!



Amy Jay Redford, Rosemont, IL.
Amy's windmill makes electricity and pumps water for a whole house.



Mark Del Lima, N.B., MA.
Mark's windmill gets energy from bolts of lightning.



Michael Bliss, Menlo Park, CA.

The turning of these windmills makes the merry-go-round horses go up and down.



Krista Johnson, Old Lyme, CT.

Krista's windmill is made of many little ones.



Laura Miller, Garrett Park, MD.

This giant windmill is the size of Japan. It makes energy for all of earth.

Timeline

Send Us Your Future Ice Skates!

What will ice skates of the future be like? Perhaps they will have one blade for figure skating, ice hockey and speed skating. Or they might have round blades for roller-ice skating. Or maybe they will be really weird.

Send us your idea for future ice skates. On the back of your drawing, write your name, address and T-shirt size. The kids who send in our favorite skates will get CONTACT T-shirts.

Write to:

Timeline: Ice Skates
3-2-1 CONTACT
 P.O. Box 599
 Ridgefield, NJ 07657

Reviews &

Here are some books to read and things to do after reading this issue of 3-2-1 CONTACT.

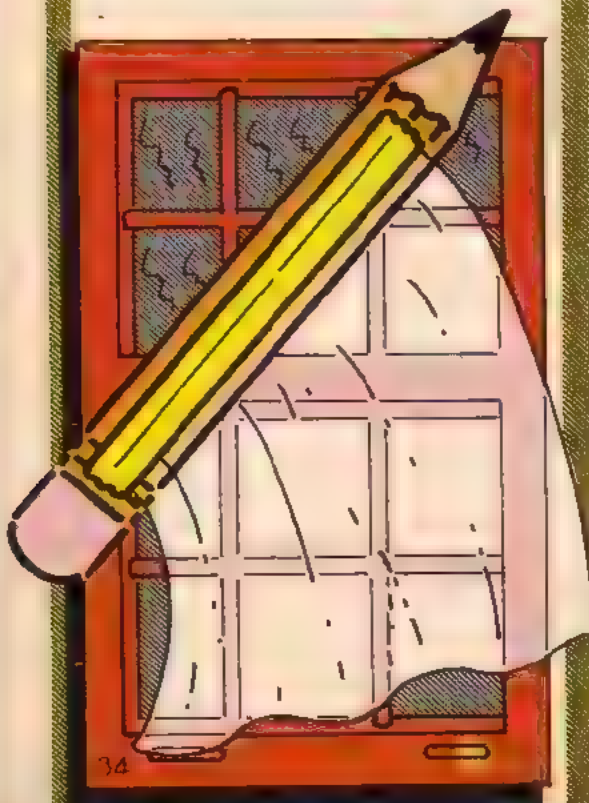
Build a Draft Detector

Is your house drafty? If it is, lots of heat may be going right out the window. Even a tiny draft can waste a lot of energy.

You can make a gadget that will tell you where the drafts are. All you need is a pencil, tape and plastic wrap.

Tape a square of wrap to the pencil. That's all there is to it. Take your draft finder to places where you think air is getting in—windows, doors, fireplaces. Hold it there. If the plastic moves, you've found a draft.

Tell your parents about it so they can block the holes. That's an easy way to save energy.



Air and Space Museum

This review was sent in by Brian Egleston, Huntingdon Valley, PA. I went to the Smithsonian Air and Space Museum in Washington, D.C. In it there is a planetarium and a movie theater where you can see shows about space and the air.

They also have a lot of spaceships that were sent into space. You can take a walk through one and see how astronauts take showers and exercise in space.

They also have the suits astronauts and pilots used to wear. These spacesuits are very heavy.

You can also hear a tape of the actual conversation Neil Armstrong had when he walked on the moon.

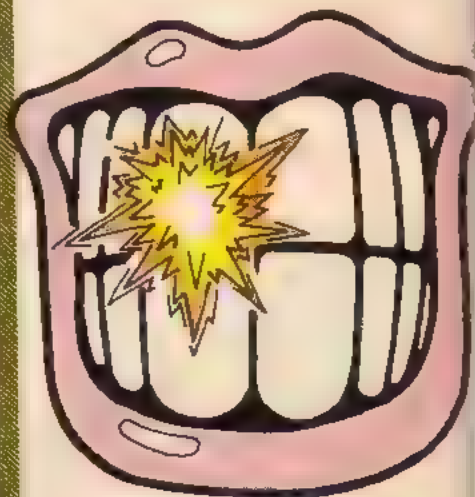
If you go to a science museum, send us a review of 100 words or less. If we use it, you'll get a T-shirt. Send your review, name, address and T-shirt size to:

3-2-1 CONTACT
Museum Review
P.O. Box 599
Ridgefield, NJ 07657

Tooth Tips

You read in the Contact Report that there may be something in foods like chocolate that is good for your teeth. But there are lots of things in foods like chocolate that can destroy them, too. That's why teeth must be taken care of properly. To find out how, send for Rx for Sound Teeth. It's a free pamphlet with pictures and tips on good dental care. To get your copy, write to:

Public Documents
Distribution Center
Pueblo, CO 81009



Winter Animal Books

On page 16, you learned how certain animals survive in winter. If you'd like to know more about some of them, here are a few books to look for at a library or bookstore.

Monkeys In this book Cynthia Overbeck shows you a special kind of monkey that lives in Japan the macaque (muh KAK). The snow monkey is a macaque. But macaques live in warm climates, too. The book has lots of

Previews



information on the lives of these monkeys. *Monkeys* is published by Lerner Publications.

Snakes How much do you know about snakes? For example, did you know they don't chew their food? Sometimes that can mean swallowing a mouse or frog—whole! Think that's weird? Well, that's not all that's strange about these creatures. You can find out more in this book by Ruth Belov Gross. It's published by Four Winds Press.

Musk Oxen The musk ox does not need shelter—even in the most freezing weather. During blizzards, other animals head for cover. Not musk oxen. They always remain in the open, standing side by side, with only their shaggy fur to protect them. Margaret Rau tells the story of

these strange Arctic animals. Her book is published by Thomas Y. Crowell.

Rabbits and Hares This book by Robert Whitehead has lots of information about different kinds of rabbits and how they live. But you can also find out other neat things —like how the story of the Easter Bunny began or why people used to think that killing black rabbits was bad luck. *Rabbits* is published by Franklin Watts



3-2-1 CONTEST

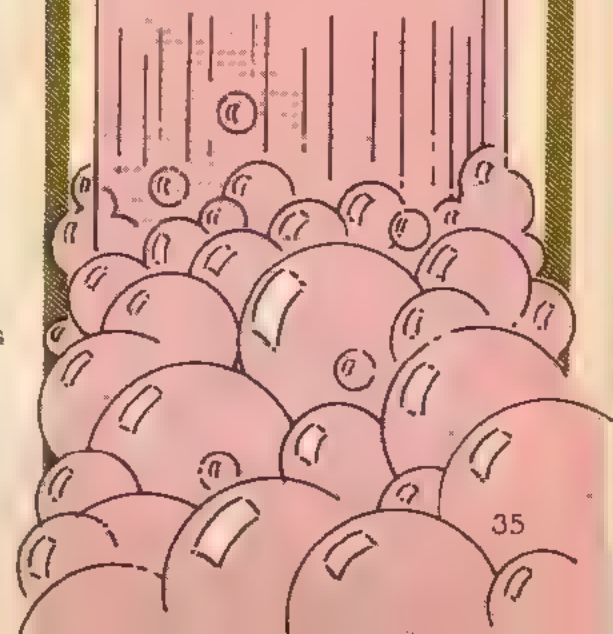
Now you know that there are all kinds of teeth to fit all kinds of animals. Here are some teeth that don't have an owner. What kind of animal do you think would have choppers like this? Use these teeth as a start. Copy them on a piece of paper. Then draw the animal that goes with them. Our five favorite drawings will win T-shirts. Send your drawing, along with your name, address and T-shirt size to:

3-2-1 CONTACT: Teeth
P.O. Box 599
Ridgefield, NJ 07657

Tall Falls

In Earth Works we tell you about the United States' most spectacular waterfall - Niagara. But even though it's powerful, it's not that tall. At just 167 feet high, Niagara is tiny compared to some. In fact, many American falls are taller. Here are the top ten:

- | | | |
|-------------------|--------|----|
| 1. Ribbon | 1,612' | CA |
| 2. Upper Yosemite | 1,430 | CA |
| 3. Silver Strand | 1,170 | CA |
| 4. Fairy | 700 | WA |
| 5. Feather | 640 | CA |
| 6. Bridalveil | 620 | CA |
| 7. Multnomah | 620 | OR |
| 8. Nevada | 594 | CA |
| 9. Illilouette | 370 | CA |
| 10. Granite | 350 | WA |



Experiment

Sticky Milk

Everyone knows that milk is for drinking. But did you know it also makes pretty good glue? No kidding! If you'd like to mix up a batch yourself, here's what you do.

What You Need

skim milk	strainer
vinegar	tablespoon
baking soda	glass jar
glass or enamel pot	water
measuring cup	

What You Do

1. Pour one pint of milk in your pot. Add three ounces of vinegar. Heat slowly and stir.
2. When milk starts forming small lumps, remove from heat. Stir until no new lumps appear.
3. Let the mixture stand for five minutes.
4. Pour the mixture through a strainer. Throw the thin liquid part away, and put the lumpy white stuff that's left into the glass jar.

5. Add to the mixture one quarter cup of water and one tablespoon of baking soda. Stir. It's glue!

Why It Works

To turn milk into glue, first the milk must spoil. This happens when bacteria in milk produce acid. Usually it takes a long time for milk to spoil. But you sped up the process by adding vinegar (an acid) and heating.

Your spoiled milk had two main ingredients—curds and whey. (That's the same yucky stuff that Little Miss Muffet eats in the nursery rhyme.) Both of these things are in regular milk, too. But it takes acid to make them separate. Whey is the thin liquid you poured away. Curds are the jelly-like globs you saved. Another name for curds is casein.

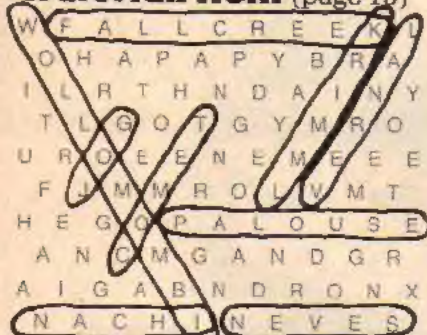
When you mixed in the baking soda, another chemical reaction took place. The result? Casein glue.



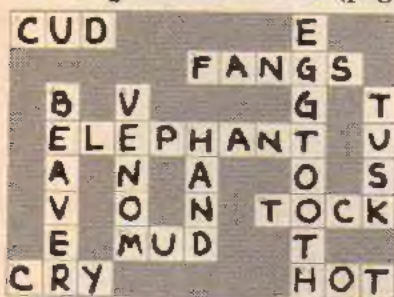
Did It!

Answers

Waterfall Hunt (page 15)



Toothy Crossword (page 15)



Poster (page 20)



Credits

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(Required by 39 U.S.C. 3685)

1. TITLE OF PUBLICATION: 3-2-1 CONTACT

1A. PUBLICATION NO.: 535490

2. DATE OF FILING: October 1, 1981

3. FREQUENCY OF ISSUE: 10 times per year monthly except January and August

3A. NO. OF ISSUES PUBLISHED ANNUALLY: 10

3B. ANNUAL SUBSCRIPTION PRICE: \$9.95

4. LOCATION OF KNOWN OFFICE OF PUBLICATION: One Lincoln Plaza, New York, NY 10023

5. LOCATION OF THE HEADQUARTERS OR GENERAL BUSINESS OFFICES OF THE PUBLISHERS: One Lincoln Plaza, New York, NY 10023

6. NAMES AND ADDRESSES OF PUBLISHER, EDITOR AND MANAGING EDITOR: PUBLISHER: Nina B. Link, CTW, One Lincoln Plaza, New York, NY 10023

EDITOR: Andrew Gutelle, CTW, One Lincoln Plaza, New York, NY 10023

MANAGING EDITOR: Acry Marrero, CTW, One Lincoln Plaza, New York, NY 10023

7. OWNER: Children's Television Workshop, a non-stock corporation, One Lincoln Plaza, New York, NY 10023

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A. TOTAL NO. COPIES PRINTED (Not Press Run) 215,300

B. PAID CIRCULATION 1. SALES THROUGH DEALERS AND STREET VENDORS AND COUNTER SALES NONE

2. MAIL SUBSCRIPTIONS 193,082

C. TOTAL PAID CIRCULATION (Sum of 10B1 and 10B2) 193,082

D. FREE DISTRIBUTION BY MAIL, CARRIERS AND OTHER MEANS, SAMPLES, COMPLIMENTARY, AND OTHER FREE COPIES 16,618

E. TOTAL DISTRIBUTION (Sum of C & D) 209,700

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2. RETURNS FROM NEWS AGENTS NONE

G. TOTAL (Sum of E, F1 and F2—should equal net press run shown in A) 215,300

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Here's a sample of what you'll find in the next issue of 3-2-1 CONTACT:

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A look at the hundreds of satellites orbiting the earth.

Bloodhound Gang

The exciting conclusion of the "Case of the Invisible Knife."

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Earthfacts: Waterfalls

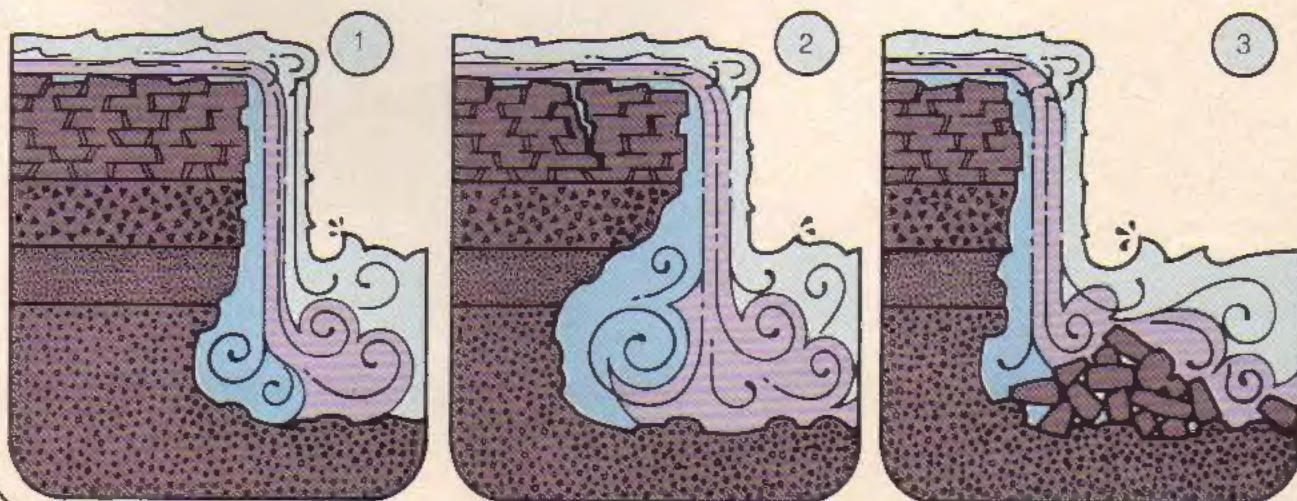
Each month CONTACT will bring you another Earth Works. Save these pages in a notebook. Soon you will have your own guide to the wonders of the planet Earth.

EarthWorks

- A waterfall is located where there is a cliff in the path of a river. When the river reaches the cliff, the water must fall over the edge.
- Waterfalls come in different sizes. The more powerful ones, like Niagara, are known as *cataracts*. Smaller falls are *cascades*.
- The world's highest waterfall is Angel Falls in the South American country of Venezuela. It is 3,212 feet high. It would take 19 Niagara Falls stacked one on top of another to equal the height of Angel Falls.
- The world's most powerful waterfall—the one that spills the most water over its edge—is Guaira Falls. It is more than twice as powerful as Niagara Falls. Guaira Falls is located on the border of the South American countries of Brazil and Paraguay.
- Niagara Falls was formed 10,000 years ago. During the last Ice Age, a glacier covered the northern United States. This giant sheet of moving ice scooped out huge amounts of rock and dirt. The path of the Niagara River, with a large cliff in the middle, was carved this way. When the ice melted, water flowed down the river and over the cliff. Niagara Falls was born!
- The border between the United States and Canada goes down the middle of the Niagara River. What we call Niagara Falls, also called the American Falls, is on the U.S. side. On the Canadian side is Horseshoe Falls. Horseshoe Falls is more than twice as wide as Niagara Falls and nine times as powerful.
- Falling water erodes, or wears away, four to seven inches of rock each year from the cliff under Niagara Falls. Because it is more powerful, Horseshoe Falls loses about three feet each year.
- Waterfalls are a good source of energy. The fast-moving water in the Niagara River is used to make electricity for the City of Niagara Falls and the surrounding area.
- Many cities got their start because of a nearby waterfall. Some you may know are: Baltimore, MD; Philadelphia, PA; Minneapolis, MN; Richmond, VA; and, of course, Niagara Falls, NY!

Below: This diagram shows how erosion causes some falls to move upstream.

1. Falling water eats away soft rock under falls faster than hard rock on top.
2. Weight of water causes hard rock shelf to collapse.
3. Edge of falls is farther upstream where process starts again.



Niagara Falls is a powerful waterfall and a beautiful sight.

Focus on Waterfalls

The most powerful waterfall in the United States is Niagara Falls in New York. Its name, which means “thundering waters” in the Iroquois Indian language, fits it well. Each second, 700,000 gallons of water—enough to fill 4,000 bathtubs—plunge over its edge!

Over the years, amazing things have happened at Niagara Falls. People have walked above it on tightropes. They have ridden over the falls in

barrels. But the most spectacular thing happened in 1969. That’s when engineers turned off the falls, by blocking the river above it. They did this to study the rocks underneath.

While poking around, the engineers found some surprises. One was a number of coins people had tossed into the falls. Another was the skeletons of two unlucky people who, many years before, had fallen into the Niagara River and had been swept over the falls.

(continued on page 39)